

NEW ABSTRACT OF THE DISCLOSURE

A method for determining position is disclosed, one that is highly reliable in determining a digging position. This method involves the capacity to sense, on
5 the ground, an AC magnetic field generated by a coil housed in a digging head even when there are other noise magnetic fields present that could affect position determination. This method is used in a non-open-cut (boring or trenching) dig. It senses the sensed the AC magnetic field provided from a magnetic field source by means of an above-ground magnetic sensor and calculates the position of the
10 magnetic field source from the magnitude and direction of the sensed AC magnetic field. When another noise magnetic field is generated by a nearby current, the magnetic field sensed by the magnetic sensor is projected onto a flat plane or straight line orthogonal to a vector-valued direction of the noise magnetic field, and the projective component is used to calculate the following: at least one position
15 of the magnetic field source; the tilt angle of the magnetic field source, its inclination to the vertical direction; and the azimuth direction of the magnetic field source, its axial direction in a horizontal plane.

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